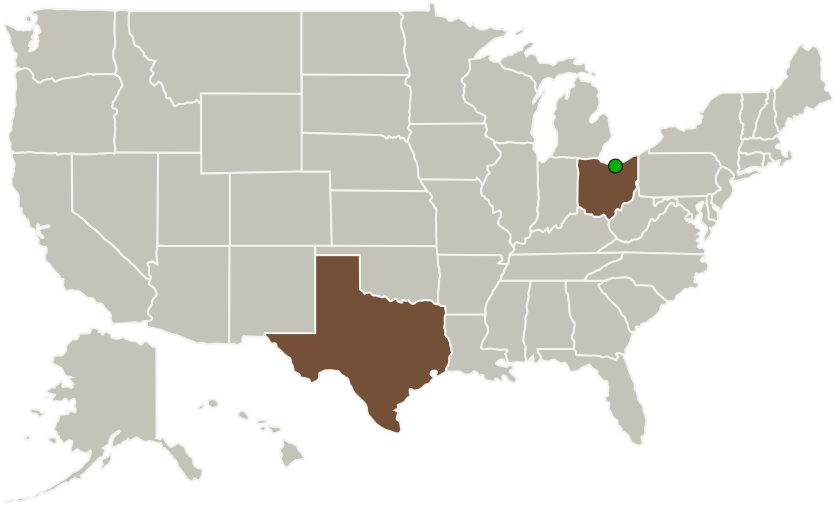
Self-Cleaning Particulate Air Filter, Phase I

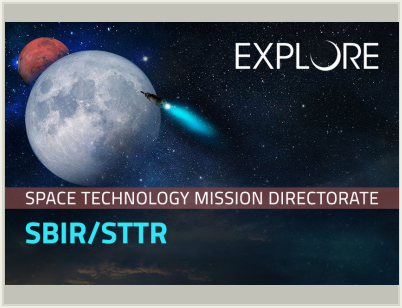
Completed Technology Project (2011 - 2011)

Project Introduction

NASA requires an innovative solution to the serious issue of particulate fouling on air revitalization component surfaces in order to address the potential for catastrophic mission failure from severely compromised air revitalization performance. Additionally, this would not only limit the number of replacement components to be carried on a long term crewed mission, but would also lower launch weight and equivalent system mass. Lynntech proposes to provide proof-of-concept for innovative stimuli-responsive smart coating functionalized particulate air filter surfaces which respond to an applied stimulus by generating a pushing off force to trigger lifting off of adherent particles which are responsible for lowered air flux and reduced airborne contaminant removal efficiency. The aims of the effort involve the preparation and down-selection of suitable self-cleaning particulate air filter surfaces followed by a demonstration of the in-place regeneration of the modified high efficiency particulate air filter surfaces in a simulated flow through air filtration system using standard regolith simulants to mimic airborne dust. The maturation and eventual availability of this reagentless self-cleaning technology will allow NASA to more efficiently close the air revitalization loop and thereby sustain the vision for existing and future manned deep space missions.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Lynntech, Inc.	Lead Organization	Industry	College Station, Texas
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Ohio	Texas

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138489)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Lynntech, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Anjal C Sharma

Co-Investigator:

Anjal Sharma

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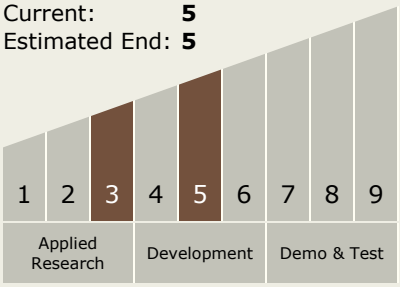
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.1 Atmosphere Revitalization

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System